GE VERNOVA

Firmware Release Notes

UR Family

Version 8.7x

Publication Reference: GER-5010A

Publication Date: November 2025

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1 Summary

This document contains the release notes for firmware version 8.70 of the Universal Relay (UR) family of products.

This release note is applicable to the products: B30, B90, C30, C60, C70, C95, D30, D60, F35, F60, G30, G60, L30, L60, L90, M60, N60, T35, T60.

1.1 Date of firmware release

Firmware 8.70: November 28 2025

Note: Major firmware releases can introduce new protection and control elements that can affect the device's Modbus memory map. Check the summary of released features to find out if it applies to a particular release.

1.2 Highlights of Firmware 8.70

- **NEW** Added support for secure R-GOOSE messages with CyberSentry level 2 software options
- **NEW** Added support for 8 feeders and 3 zones in B30 relays with HardFiber SW option
- **NEW** Enhanced the generator loss of excitation protection element
- **NEW** Added new FlexLogic operand *87L DIFF SYC IN PROG*
- **NEW** Add multicast PMU streaming for data frames

2 Firmware version 8.70

2.1 Cybersecurity

2.1.1 Added support for secure R-GOOSE messages with CyberSentry level 2 software options

Category: N, C

Products: All with IEC 61850 and CyberSentry level 2 SW option

Impacted firmware: All

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, Routable GOOSE (R-GOOSE) messages were transmitted without any encryption. Firmware 8.70 adds support for authentication and encryption of R-GOOSE messages, as described in IEC 62351-9 and IEC 62351-6. The feature is available in relays with IEC 61850 and CyberSentry level 2 software options. This feature requires a Key Distribution Center (KDC) server, like the PCItek Garibaldi server.

2.2 Bus Differential Systems B30, B90

2.2.1 Added support for 8 feeders and 3 zones in B30 relays with a new HardFiber SW option

Category: E

Products: B30 HardFiber with 8 feeders 3 zones SW option

Impacted firmware: 5.62 to 8.62

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, a B30 HardFiber relay supported only 6 banks and 6 sources. In firmware 8.70, a B30 HardFiber relay adds support for 8 feeders with 12 banks and 14 sources. Banks 7 to 12 are current-only banks.

2.2.2 Changed the default value of the bus zone differential seal-in setting in B30 and B90 relays

Category: G

Products: B30, B90

Impacted firmware: All

Corrected firmware: 8.70

Workaround: N/A

Description: In previous version, the default value of the bus zone differential seal-in setting was 400 msec. In firmware 8.70, the default value of bus zone differential seal-in setting is changed to 0 msec.

2.3 Generator Protection Systems G30, G60

2.3.1 Enhanced the generator loss of excitation protection element

Category: E

Products: G30, G60

Impacted firmware: All

Corrected firmware: 8.70

Workaround: N/A

Description: In firmware 8.70, the generator Loss of Excitation element was modified to provide the ability to support an admittance scheme in addition to the two legacy schemes. In the previous versions, only legacy schemes with two concentric MHO shapes along the X-axis were supported. Three new settings were added to allow the placing of two MHO shapes anywhere. These can even be side-by-side and overlaying each other to support admittance schemes via conversion from the G-B or P-Q planes into R-X plane. Admittance schemes allow a better match to the generator capability curve.

2.4 Line Differential Protection Systems L30, L90

2.4.1 Added new FlexLogic operand "87L DIFF SYC IN PROG

Category: E

Products: L30, L90

Impacted firmware: All

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, users must configure dedicated logic to indicate that the relay synchronization is in progress. In firmware 8.70, built-in logic achieves this functionality by asserting the new FlexLogic operand 87L DIFF SYC IN PROG. This operand can be used to secure instantaneous element operation during synchronization, if needed.
Note that the first release of the UR 8.70 instruction manual wrongly documents this operand as "SYNC IN PROGRESS. This will be corrected in the next instruction manual release.

2.5 Transformer Protection System T60

2.5.1 Fixed transformer percent differential directional flag in T60 relays with the "Additional Transf Diff" option

Category: M

Products: T60 with the "Additional Transf Diff" option

Impacted firmware: 8.61, 8.62

Corrected firmware: 8.70

Workaround: N/A"

Description: In previous T60 versions with the "Additional Transf Diff" option, the transformer percent differential directional flag is incorrect during an internal fault when the number of Direction flag contributors are more than one in a Transformer. In firmware 8.70, this issue is fixed by isolating the direction flag evaluation for each transformer.

2.5.2 Fixed firmware to allow using the same source in different transformer windings in T60 relays with the "Additional Transf Diff" option

Category: M

Products: T60 with "Additional Transf Diff" option

Impacted firmware: 8.6x

Corrected firmware: 8.70

Workaround: N/A

Description: In previous T60 versions, using the same source in different transformer windings with the "two transformer" option may cause incorrect metering for the respective windings. In firmware 8.70, this issue is fixed.

2.6 Common Protection Functions

2.6.1 Enhanced phase overvoltage and phase undervoltage elements

Category: E

Products: All products

Impacted firmware: All

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, the UR phase overvoltage and phase undervoltage elements use the phase voltage magnitude, calculated using a half-cycle Fourier transform. During presence of even harmonics or resynchronization in L90/L30 relays, these elements could experience some inaccuracies. In firmware 8.70, the phase overvoltage and phase undervoltage elements use the phase voltage magnitude calculated using a full-cycle Fourier transform. This improves the response, especially in the presence of harmonics or transients in the voltage channel. Additionaly, in the L90/L30 relays during the synchronization period, the phase overvoltage and phase undervoltage elements dynamically switch their input between full-cycle Fourier phasor magnitude and a filtered RMS value, eliminating inaccuracies during synchronization.

2.7 Platform

2.7.1 Add multicast PMU streaming for data frames

Category: E

Products: All products with PMU option

Impacted firmware: 4.90 to 7.62

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, the UR platform provided the option only for unicast PMU. In firmware 8.70, support for multicast PMU was added. Synchrophasor data frames are streamed to a multicast IP address. All other type of frames (command, configuration, header) are being sent via TCP or UDP unicast communication.

2.7.2 Rebranded firmware to reflect the GE Vernova company name

Category: E

Products: All products

Impacted firmware: All

Corrected firmware: 8.70

Workaround: N/A

Description: In firmware 8.70, certain strings and logos have been rebranded to reflect the GE Vernova company name.

2.7.3 Fixed firmware to prevent reverting to the "Not Programmed" state after restarting a relay with CyberSentry SW option and "Lock Relay Settings" enabled

Category: U

Products: All products

Impacted firmware: 8.30 to 8.62

Corrected firmware: 8.70

Workaround: Do not enable the setting "Lock Relay Settings"

Description: In previous versions, a relay with CyberSentry SW option in which the setting "Lock Relay Settings" is enabled, reverts to the "Not Programmed" state. The "Lock Relay Settings" setting is disabled by default. In firmware 8.70, this issue is fixed.

2.7.4 Fixed firmware to prevent automatic assertion of some of the legacy fixed Goose "FG REM IN On" FlexLogic operands after a major firmware upgrade

Category: R

Products: All products with IEC 61850

Impacted firmware: 8.30 to 8.62

Corrected firmware: 8.70

Workaround: Reboot the relay an additional time after a major FW upgrade.

Description: In previous versions, after a major FW upgrade, some of the legacy fixed GOOSE "FG REM IN On" FlexLogic operands are asserted automatically. An additional reboot or writing a CID file to the relay resolves the issue. In firmware 8.70, this issue is fixed.

2.7.5 Fixed firmware to prevent displaying the "FG REM IN On" FlexLogic operands as INVALID on the "FlexLogic Operand States" webpage

Category: R

Products: All products with IEC 61850

Impacted firmware: 8.30 to 8.62

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, the "FlexLogic Operand States" webpage displays the "FG REM IN On" FlexLogic operand names as "INVALID" before a CID file is written to the relay. In firmware 8.70, this issue is fixed.

2.7.6 Fixed firmware to prevent automatically asserting the "Leap Second Occurred" bit immediately after restarting the relay

Category: R, C

Products: All products with PMU option

Impacted firmware: 8.50 to 8.62

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, immediately after restarting a relay with a PMU option, the "Leap Second Occurred" bit was asserted in the PMU frame. In firmware 8.70, this issue is fixed.

2.7.7 Enhanced DSP diagnostics to prevent misoperation due to faulty DSP module

Category: F

Products: All products

Impacted firmware: All

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, in very specific cases a faulty DSP module hardware may cause a misoperation before the firmware is able to detect it. In firmware 8.70, for those specific cases, the sensitivity of declaration of internal hardware errors was adjusted to ensure safe and secure relay protection activation.

2.7.8 Fixed firmware to prevent an unexpected restart for a relay with IEEE 1588, PMU, and PTP

Category: B

Products: All products

Impacted firmware: 8.61, 8.62

Corrected firmware: 8.70

Workaround: Avoid upgrading to the affected FW versions if the order code includes the listed SW options

Description: In previous version, a relay with an order code that includes the IEEE 1588, PMU, and PTP SW options may experience an unexpected restart if upgraded to the affected FW versions. In firmware 8.70, this issue is fixed.

2.7.9 Corrected the time code and local code field values in COMTRADE files

Category: R

Products: All products

Impacted firmware: 8.6x

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, the time code and local code field values in COMTRADE files may be incorrect in the oscillography, data logger, and PMU records if a local time offset from UTC is non-zero. In firmware 8.70, this issue is fixed.

2.7.10 Fixed FW to correctly update the breaker status when RxGOOSE DPS are used in the breaker control settings

Category: G

Products: All, products with with IEC 61850 apart from B90

Impacted firmware: 8.6x

Corrected firmware: 8.70

Workaround: N/A

Description: In previous versions, if RxGOOSE DPS inputs are used in the breaker control settings, the breaker status is not updated correctly. This problem is not present in the disconnect switches. In firmware 8.70, this issue is fixed.

2.7.11 Changed the maximum value of the ground TOC/ IOC pickup settings to 3.000 pu in order codes with sensitive ground CT

Category: G

Products: All, products with IEC 61850 apart from B90 and C30

Impacted firmware: 8.6x

Corrected firmware: 8.70

Workaround: N/A

Description: In previous version, the maximum value of the ground TOC pickup setting and the ground IOC pickup setting was 30.000 pu even in relays with sensitive ground CT. In firmware 8.70, the maximum value of the ground TOC/ IOC pickup settings was lowered to 3.000 pu in relays with sensitive ground CT.

2.8 Communications

2.8.1 Fixed FW to prevent the MMS server from becoming unresponsive in certain scenarios

Category: C

Products: All products with IEC61850

Impacted firmware: 8.40 to v8.45, v8.50,8.51, 8.60 to 8.62

Corrected firmware: 8.60

Workaround: N/A

Description: In previous versions, occasionally after many cycles of connecting to the MMS server in the UR relay, reading oscillography files, and disconnecting, the MMS server stops responding to the MMS client. The only way to recover the MMS server functionality is by rebooting the relay. In firmware version 8.70, this issue is fixed.

2.8.2 Fixed SmpSynch clock source value in IEC 61850-90-5 PMU frames when the relay is synchronized to IEEE 1588

Category: C

Products: All products with PMU and 61850-90-5 SW option

Impacted firmware: 7.00 to 8.62

Corrected firmware: 8.70

Workaround: Use IRIG-B clock synchronization when using IEC 61850-90-5 PMU

Description: In previous versions, the SmpSynch clock source value in IEC 61850-90-5 PMU frames does not follow the standard when the relay is time synchronized to IEEE 1588. In firmware version 8.70, this issue is fixed.

3 Appendix

3.1 Change categories

This document uses the following categories to classify the changes.

Code	Category	Comments
N	New feature	A separate feature added to the relay.
G	Change	A neutral change that does not bring any new value and is not correcting any known problem
E	Enhancement	Modification of an existing feature bringing extra value to the application
D	Changed, incomplete or false faceplate indications	Changes to, or problems with text messages, LEDs and user pushbuttons
R	Changed, incomplete or false relay records	Changes to, or problems with relay records (oscillography, demand, fault reports, etc.)
C	Protocols and communications	Changes to, or problems with protocols or communication features
M	Metering	Metering out of specification or other metering problems
P	Protection out of specification	Protection operates correctly but does not meet published specifications
U	Unavailability of protection	Protection not available in a self-demonstrating way so that corrective actions should be taken immediately
H	Hidden failure to trip	Protection may not operate when it should
F	False trip	Protection may operate when it should not
B	Unexpected restart	Relay restarts unexpectedly

3.2 For Further Assistance

For product support, contact the information and call center as follows:

GE Vernova

650 Markland Street

Markham, Ontario

Canada L6C 0M1

Worldwide telephone: +1 905 927 7070

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